

I can analyze a graph that exhibits the qualitative features of a function that has been described verbally.

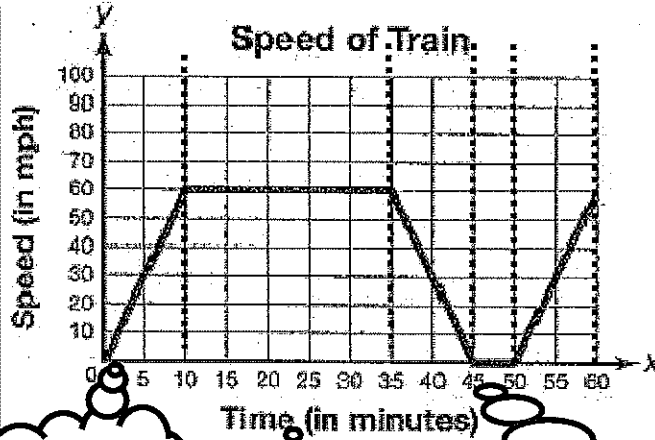
When a train left the station, it steadily increased its speed. It took 10 minutes to reach its top speed of 60 mph. It rode at this speed for 25 minutes. Then it began slowing down to stop at the next station. It took 10 minutes to bring the train to a stop. It remained at the station for 5 minutes then pulled away. Again, the train steadily increased its speed to 60 mph over a 10 minute period.

**Step 1:** Use dashed lines to divide the graph into intervals where changes occur.

**Step 2:** Decide whether each interval is increasing, decreasing, or neither.

**Step 3:** Think about the rate of change. Is it constant within the interval?

**Step 4:** Be sure to think about the time along the x-axis. Does it fit the story?

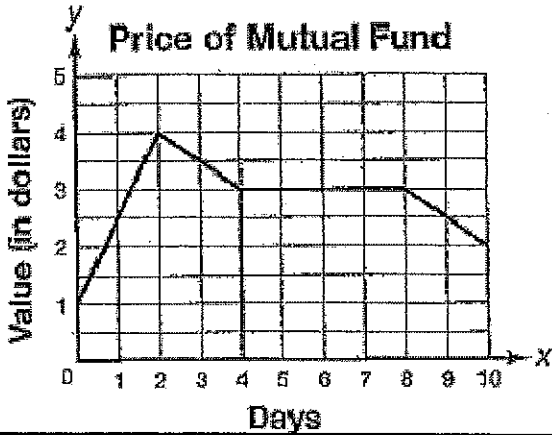


The first interval is increasing from 0-60

For the next 25 minutes, the rate is steady at 60 mph.

For the next 10 minutes, the speed decreases from 60 to 0 mph where it stays for 5 minutes before increasing again to 60 mph in the last 10 minute interval.

Use the graph below to fill in the words to complete each sentence.



**Word Bank:** Increasing, decreasing, or constant.

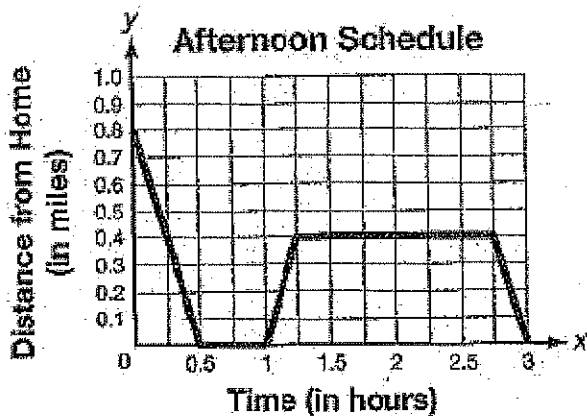
Between  $x=0$  and  $x=2$ , the function is Increasing.

Between  $x=2$  and  $x=4$ , the function is decreasing.

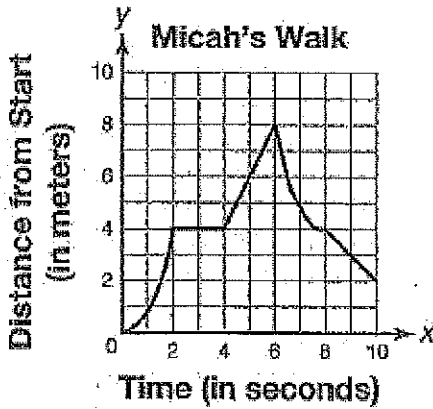
Between  $x=4$  and  $x=8$ , the function is Constant.

Between  $x=8$  and  $x=10$ , the function is decreasing.

Use the graph below to fill in the story.



Tyrone left school and walked 0.8 mile(s) home. He remained at home for 30 minutes. He then walked 0.4 mile(s) to his friend Ben's house. He and Ben worked on their project for 1.5 hour(s), at which time Tyrone left and walked home. The walk home took 15 minutes.

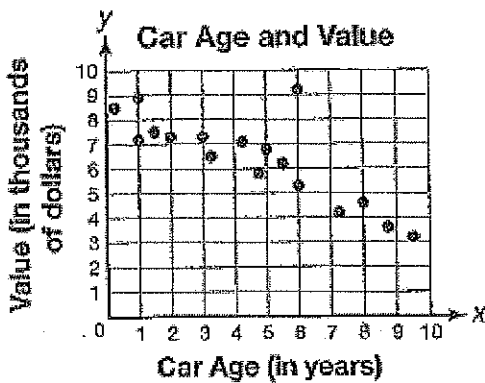
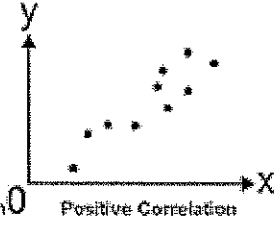
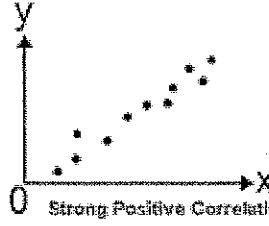
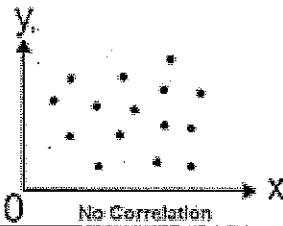
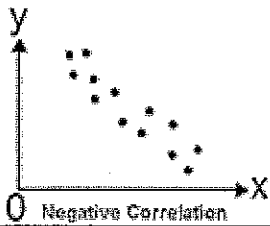


Look at each description of the function. Select True or False for each statement.

- A. It is increasing between 0 and 4 seconds.  True  False
- B. It is nonlinear between 4 and 6 seconds  True  False
- C. It is decreasing between 6 and 8 seconds  True  False
- D. It is constant between 2 and 4 seconds  True  False
- E. It is nonlinear between 0 and 2 seconds  True  False
- F. It is increasing between 8 and 10 seconds  True  False

I can construct and interpret scatter plots and find a line to model the relationship.

A scatter plot is a graph that shows the relationship between two variables (bivariate data). Each point on the scatter plot represents an ordered pair. An outlier is a value that lies outside of the normal pattern. Data can sometimes show a trend or pattern that can be modeled using a line of best fit. The data would be described as having a linear association. The association can be either positive or negative depending on the relationship between the variables. If both variables increase, the association is positive and the line of best fit will have a positive slope. If one variable increases while the other decreases, the association will be negative and the line of best fit will have a negative slope.



According to the scatter plot to the left, as the age of a car increases, what happens to the value of the car? *it decreases*

How would you describe the association/correlation?

*Strong, negative*

Write an ordered pair to identify the outlier.

*(6, 9)*

How much would you expect a car that is 10 years old to be worth?

- A. \$6,020
- B. \$3,435
- C. \$5,467
- D. \$1,0434

Write an appropriate line of best fit for the data.

$$y = \frac{4}{5}x + 9$$

I understand the patterns of association that can be seen in a two-way table.

Two-way frequency tables are a way to organize bivariate data. The table shows the frequency, or count, in each category.

In a group of 90 eighth grade students surveyed, 40 are in an after school program. 22 play sports after school. 10 play sports and participate in the after school program. Fill in the frequency table to the right.

	Participate in After School Program	Do not participate in After School Program	Total
Participate in Sports	10	12	22
Do not participate in Sports	30	38	68
Total	40	50	90

What percentage of students surveyed do not participate in the after school program or play a sport?  $38/90 = 42\%$

What percentage of students surveyed participate in sports?  $22/90 = 24\%$